Fundamentals of Physics and Measurement

Physics · Answer Key · 20 Questions

1. What is the primary focus of the initial section regarding scale in nature?

A) The scale of the universe
B) The scale of natural phenomena
C) The scale of human perception
D) The scale of microscopic particles

2. Which of the following is NOT listed as a fundamental unit of measurement?

A) Time
B) Length
C) Volume
D) Electric Current

3. What is the SI unit for temperature?

A) Celsius
B) Kelvin
C) Fahrenheit
D) Rankine

4. What does 'derived quantity' mean in the context of measurement?

A) A quantity that cannot be measured
B) A quantity derived from fundamental quantities
C) A quantity that is only theoretical
D) A quantity that is always an integer

5. What is the main characteristic of an analog signal?

A) It changes in discrete steps
B) It is represented by 0s and 1s
C) It changes continuously
D) It is processed by digital devices

6. Which of the following is an example of a measurement signal?

A) Light, sound, seismic wave, heat, temperature, pressure
B) Height, weight, volume, density
C) Speed, acceleration, mass
D) Color, smell, taste, texture

7. What is the purpose of measurement standards?

A) To make measurements less precise
B) To allow for qualitative descriptions of phenomena
C) To ensure accurate and consistent measurements
D) To complicate scientific research

8. Which unit is used to measure the speed of a car in a way that simplifies deceleration?

A) km/s
B) m/s^2
C) km/h
D) m/h

9. What is the meaning of 'measurement' in physics research?

A) Estimating a quantity without tools
B) Experiencing scientific phenomena and making judgments
C) Using appropriate measurement tools and units
D) Describing phenomena qualitatively

10. What is the main difference between 'measurement' and 'estimation'?

A) Measurement uses tools and standards, while estimation relies on experience.
B) Estimation is always more accurate than measurement.
C) Measurement is only used for large quantities, while estimation is for small ones.
D) There is no difference between measurement and estimation.

11. What is the SI unit for mass?

A) gram
B) kilogram
C) pound
D) ounce

12. What is the SI unit for luminous intensity?

A) Candela
B) Lux
C) Lumen
D) Watt

13. What does the concept of 'scale' in nature refer to?

A) The size of objects
B) The range of phenomena
C) The measurement units used
D) The speed of natural processes

14. What is the characteristic of a digital signal?

A) It represents values with discrete numbers, typically 0 and 1.
B) It changes continuously over time.
C) It is always generated by natural phenomena.
D) It cannot be stored or transmitted.

15. Which fundamental unit is used for electric current?

A) Volt
B) Ohm
C) Ampere
D) Watt

16. What is the derived unit for density?

A) kg/m
B) m^3/kg
C) kg/m^3
D) m/kg

17. What is the SI unit for time?

A) minute
B) hour
C) second
D) day

18. What is the SI unit for length?

A) kilometer
B) meter
C) mile
D) foot

19. What is the derived unit for acceleration?

A) m/s
B) m/s^2
C) m^2
D) m^3

20. What does 'physical quantity' refer to in physics?

A) A qualitative description of a phenomenon
B) A measurable property of an object or phenomenon
C) The theoretical concept of a phenomenon
D) The mathematical formula representing a phenomenon